REMARKS

Applicants have carefully reviewed the Office Action dated March 4, 2004. Claims 21-32 are pending in this application. Applicants have amended Claims 21 and 27 to more clearly point out the present inventive concept. Reconsideration and favorable action is respectfully requested.

The Abstract of the Disclosure has been objected to because it exceeds 150 words in length. This has been corrected.

Claims 21-32 stand rejected under 35 U.S.C. 102(e) as being anticipated by *Keeler et al.* This rejection is respectfully traversed with respect to the amended claims.

Applicants believe that a slight discussion of the way that the invention works as compared to a conventional network is useful. This invention is related to modeling inputs and outputs in a table wherein the inputs have a direct and fixed relationship for defining the output. This is basically set of information wherein there is a defined output value for each of one or more inputs, such as would be found in properties tables. In conventional Neural Net modeling, a set of input data and a set of output data, this being measured data measured during the operation of a plant by way of example, is utilized as a training set. The reason that Neural Networks are used is that they are non-linear networks and form a representation of an output based upon whatever inputs are provided. However, in a large number of cases, some of the inputs have no effect on the output or minimal effect thereon. Further, some if not most do not have a direct effect on the output. The reason for this is that one input may have an indirect effect. Therefore, a Neural Network with a thousand inputs can be trained to provide a single output. Thereafter, when the network is utilized for prediction, it will be exercised with a thousand inputs. Sensitivity analysis is utilized sometimes to reduce this number of inputs. This is facilitated by tying all but one of the inputs to a fixed value and then "moving" this one input. If the output changes at all or by any measurable amount, then a sensitivity determination can be made. What often happens is that out of a thousand inputs, less then 5% have a measurable effect on the output. The problem is, however, that the network will be trained on all of the inputs. The reason for this is that there is no known or fixed

relationship between any of the inputs and the output. If such were the case, then an finite number of them would define the relationship between the input and the output, this being basically a first principals model. In Applicants invention, there is a known fixed relationship between a group of inputs and at least one output. For example, they may be an algorithm that provides four inputs and a single output wherein all four inputs are required in order to determine the output value in accordance with that algorithm. A calculation would then be done over a range of inputs to provide a range output values to in effect provide a table of values. These calculated outputs and the input values utilized for such calculation would constitute the training dataset.. If only three of the inputs were provided, then there would be no output value. Once the network is trained on this dataset, then input of values that were used to train the network would be input to the network and an output predicted. This is faster than utilizing a look up table or even processing the information through a processor to run the algorithm.

The Examiner has referred to the *Keeler* reference for various aspects. The Examiner has set forth that the terminology "each known output has a fixed and defined relationship to one or more of the inputs within a given set of inputs" is described in the abstract, Lines 1-17, and in the specification, at Column 5, Line 10-18 and Column 16, Lines 26-36 as related to training a prediction model respective of outputs. Applicants believe that this language does describe the general training operation. However, as noted hereinabove, this training operation is on a plurality of inputs wherein the relationship between the input and the output is unknown. In fact, it is not known whether a given input has any relationship on the output. The inputs are merely collected data and the outputs are merely collected data that all form part of a training data set. There may in fact be a number of inputs that have a relationship to the output, but the question is whether these are known and fixed relationships. As such, Applicants believe that the language as amended in the claims, wherein all of the inputs utilized have a fixed and defined relationship with the outputs, would not be anticipated by this portion of the *Keeler* reference. The step of inputting data to the predictive model that is within the set of given inputs requires that the data input is only data that has a defined relationship. Of course, this is defined by the selection of the inputs. However, the training data set is a restricted training data set and, as such, there is a defined input space over which the network would be trained and this defined input space is the input space from which data would be accepted. For example, if may be that the input required a temperature value in one degree increments between 20 degrees and 50 degrees Celsius. If so, then only inputs between those two limits

would provide a valid output. Of course, Applicants know that values outside of those values could be input and there would in fact be some type of prediction. The third aspect the Examiner pointed out was that respecting to the terminology "as compared to the actual fixed and defined relationship." Again, if a set of training outputs and a set of training inputs associated with a historical database were utilized to train the network, there would be inherent errors associated therewith. However, without knowing the relationship, there can be no error for inputs and predictive outputs as compared to the "actual fixed and defined relationship," since there is no such a relationship that is known prior to the training of the model in *Keeler*.

Applicants believe that *Keeler* does not anticipate the claims as amended for the reasons described hereinabove. Therefore, Applicants respectfully request the withdrawal of the 35 U.S.C. 102(e) rejection with respect to Claims 21-32.

Applicants have now made an earnest attempt in order to place this case in condition for allowance. For the reasons stated above, Applicants respectfully request full allowance of the claims as amended. Please charge any additional fees or deficiencies in fees or credit any overpayment to Deposit Account No. 20-0780/PAVI-25,759 of HOWISON & ARNOTT, L.L.P.

Respectfully submitted,
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